



ATSC Standard: A/331:2025-06 Amendment No. 1, “Time”

A/331:2025-06 Amend. No.1
10 September 2025

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Revision History

Version	Date
Amendment approved	10 September 2025

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1. OVERVIEW

1.1 Definition

An Amendment is generated to document an enhancement, an addition or a deletion of functionality to previously agreed technical provisions in an existing ATSC document. Amendments shall be published as attachments to the original ATSC document. Distribution by ATSC of existing documents shall include any approved Amendments.

1.2 Scope

This document describes a set of changes to the treatment of “time” in A/300 and A/331.

1.3 Rationale for Changes

The changes described in this document are being proposed to alleviate any confusion between “GPS” (meaning the US GPS SATNAV system), whether providing time data or location data, and to clarify description of time generally.

This amendment is intended to satisfy NPP-075.

1.4 Compatibility Considerations

The changes described in this document are backward-compatible relative to the currently published version of the standard to which this Amendment pertains and any previously approved Amendments for that standard. The meaning of the text remains the same, but it’s easier to understand.

2. LIST OF CHANGES

Change instructions are given below in *italics*. Unless otherwise noted, inserted text, tables, and drawings are shown in *blue*; deletions of existing text are shown in *red-strikeout*. The text “[ref]” indicates that a cross reference to a cited referenced document should be inserted.

2.1 Change Instructions

Add the following items to Section. 3.4, “Terms”:

SATNAV – A global or regional infrastructure comprising a constellation of satellites, ground control stations, and user receivers, designed to provide real-time positioning, navigation, and timing (PNT) data anywhere within the system's coverage area.

GNSS – Any satellite constellation that provides positioning, navigation, and timing services, such as Galileo (EU), GPS (USA), GLONASS (Russia), BeiDou (China), and NavIC (India).

Modify Section 6.3, “Service List Table (SLT),” as shown:

The SLT shall be represented as an XML document containing a **SLT** root element that conforms to the definitions in the XML schema that has namespace:

tag:atsc.org,2016:XMLSchemas/ATSC3/Delivery/SLT/1.0/

The definition of this schema is in an XML schema file, *SLT-1.0-2021120920250604.xsd*, accompanying this Standard, as described in Section 3.6 above. The XML schema xmlns short name should be "slt".

Modify Section 6.3.1, "SLT Syntax Description," as shown:

@drmSystemID	0..1	listOfanyURI	Specifies the DRM System ID(s) related to this service.
@configuration	0..1	token	Declares the Service Configuration.
CodecStrings	0..N1		Container for MPD @eCodecs strings
@codecs Codecs	1..N	string	A delimited lists of MPD @codecs strings per RFC6381 [30]
@kind	1	token	Type of codecs described
SimulcastTSID	0..1	unsignedShort	Identifier of an ATSC 1.0 broadcast stream carrying the same programming content.

Modify Section 6.3.1, below the table, as shown:

~~@codecs — This list of one or more @codec strings shall identify the set of @codec strings which are present in an MPD for this Service. This list shall conform to RFC6381 [30]. Note that RFC6381 [30] requires that each @codec string begins with a registered "4CC" code (see RFC6381 [30], Sec. 3.3). A receiver might use this field to determine if it is capable of correctly decoding and presenting the content that is part of this Service.~~

Modify Section 6.3.2, "SLT Semantics," adding semantics for CodecStrings and Codecs as shown:

Note: Other configurations are under development; e.g. "hybrid."

CodecStrings – This element shall contain one or more Codecs elements indicating what codecs and versions are in use in the Service. The list indicates all the codecs that are used and if a Receiver can decode one codec in each value of kind, that is sufficient to decode the Service. A receiver might use this field to determine if it is capable of correctly decoding and presenting the content that is part of this Service with the available codecs; and perhaps whether the Service should be listed in a guide.

Codecs – This element describes the content kind and codec(s) and shall be a value from Table 6.[n].

Table 6.[n] Values for kind

kind	Meaning
video	The media signaled with the Codecs string are video media
audio	The media signaled with the Codecs string are audio media
captions	The media signaled with the Codecs string are captions media
other values	ATSC Reserved

Modify Section 6.3.2 in the semantics for OtherRf as shown:

@lat – This attribute shall indicate the latitude of the location of the transmitter, on RF frequency @otherBsIdRf. @lat shall be in the range of -90.0 to 90.0 indicating degrees and fraction of a degree (not degrees, minutes, seconds) of the latitude ~~or longitude~~ of a transmitter location ~~(respectfully)~~. See "latitude-decimal-type" ~~and "longitude-decimal-type"~~ in [74] for context.

Receivers might not utilize all precision supplied but are expected to utilize at least ~~minutes-of are (1/60 precision)~~ the first three decimal places of the value. Note ~~also~~ that some regulatory agencies provide this data to the nearest tenth of a second. ~~Note that coordinates (such as latitude, longitude and elevation) are generally calculated based in WGS-84 [75].~~

@long – This attribute shall indicate the longitude of the location of the transmitter, on RF frequency @otherBsidRf. @long shall be in the range of -180.0 to 180.0 indicating degrees and fraction of a degree (not degrees, minutes, seconds) of the ~~latitude or~~ longitude of a transmitter location (~~respectfully~~). Receivers might not utilize all precision supplied but are expected to utilize at least ~~minutes-of are (1/60 precision)~~ the first three decimal places of the value. Note ~~also~~ that some regulatory agencies provide this data to the nearest tenth of a second. ~~Note that coordinates (such as latitude, longitude and elevation) are generally calculated based in WGS-84 [68].~~

@elev – This attribute shall indicate the antenna radiation center in Height Above Mean Sea Level to the nearest meter of the transmitter emitting on RF frequency @otherBsidRf. ~~Note that coordinates (such as latitude, longitude and elevation) are generally calculated based in WGS-84 [68].~~

and

@haat – This attribute, if present, shall indicate the Height Above Average Terrain, over the range from 3.2 km to 16 km from the transmitter, of the antenna radiation center to the nearest meter (this field may be a negative number), in the @heading direction. Note that these values (worldwide) can be obtained using the online calculator found at <https://www.fcc.gov/media/radio/haat-calculator>; for locations outside the U.S. the “GLOBE” database should be selected. ~~Note that coordinates (such as latitude, longitude and elevation) are generally calculated based in WGS-84 [68].~~

Modify Section 6.5.2, “AEAT and AEA Semantics,” in the semantics for Location@type as shown:

- If @type="polygon", then the **Location** shall define a geospatial ~~space~~ area ~~consisting of a connected sequence of~~ described by three or more ~~GPS coordinate pairs~~ vertices, expressed in latitude/longitude pairs that form a closed, non-self intersecting loop. Each coordinate pair shall be expressed in decimal degrees. Latitude shall be in the range of -90.0 to 90.0 indicating degrees and decimal fractions of a degree (not degrees, minutes, seconds) of the latitude of each vertex. Longitude shall be in the range of -180.0 to 180.0 indicating degrees and decimal fractions of a degree (not degrees, minutes, seconds) of the longitude of each vertex. Receivers might not utilize all precision supplied but are expected to utilize at least the first three decimal places of latitude and longitude. The value of **Location** shall conform to the syntax described in the following ABNF for “polygon-coordinates”:

```
; !syntax("abnf")
; Polygon coordinates: requires 3 or more coordinate pairs, each separated by a space.
; Example: "45.7606,4.8351 40.7128,-74.0060 -34.9293,-58.3754"
polygon-coordinates = coordinate-pair 2*(" " coordinate-pair)

; Latitude and Longitude in decimal degrees format, separated by a comma
; Examples: 37.7749,-122.4194 or +37.7749,-122.4194
coordinate-pair = latitude "," longitude

; -90 through +90
```

```

latitude      = [ "-" / "+" ] [DIGIT08] DIGIT ["." fraction] ; 0.fraction to 89.fraction
               / [ "-" / "+" ] DIGIT9 DIGIT0 ; 90 exactly only

; -180 through +180
longitude     = [ "-" / "+" ] [DIGIT0] 1*2DIGIT ["." fraction]      ; 0.fraction to 99.fraction
               / [ "-" / "+" ] DIGIT1 DIGIT07 DIGIT ["." fraction] ; 100.fraction to
179.fraction
               / [ "-" / "+" ] DIGIT1 DIGIT8 DIGIT0                  ; 180 exactly

fraction      = 1*DIGIT

DIGIT0        = %x30          ; 0
DIGIT1        = %x31          ; 1
DIGIT         = %x30-39       ; 0-9
DIGIT07       = %x30-37       ; 0-7
DIGIT08       = %x30-38       ; 0-8
DIGIT8        = %x38          ; 8
DIGIT9        = %x39          ; 9

```

- If @type="circle", then the Location shall define a circular area represented by a central point given as a **latitude/longitude** coordinate pair **subject to the requirements above in “polygon”**, followed by a space character and a **positive** radius value in **miles** (indicated by a ‘m’ suffix) or **kilometers** (indicated by a required ‘km’ suffix). The value of **Location** shall conform to the syntax described in the following ABNF for “circle-coordinates”:

```

; !syntax("abnf")
; Circle coordinates: requires one coordinate pair, a space, then a radius value.
; Examples: "45.7606,4.8351 10.5m", "17.856556,-77.047607 25km", "56.368,53.306 17.5m"
circle-coordinates = coordinate-pair " " radius

radius = radius-miles
       / radius-km

radius-miles = 1*DIGIT ["." fraction] "m" ; miles and fraction (positive value)
radius-km    = 1*DIGIT ["." fraction] ["km"] ; km and fraction (positive value) (default)

; Latitude and Longitude in decimal degrees format, separated by a comma
; Examples: 37.7749,-122.4194 or +37.7749,-122.4194
coordinate-pair = latitude "," longitude

; -90 through +90
latitude      = [ "-" / "+" ] [DIGIT08] DIGIT ["." fraction] ; 0.fraction to 89.fraction
               / [ "-" / "+" ] DIGIT9 DIGIT0 ; 90 exactly only

; -180 through +180
longitude     = [ "-" / "+" ] [DIGIT0] 1*2DIGIT ["." fraction]      ; 0.fraction to 99.fraction
               / [ "-" / "+" ] DIGIT1 DIGIT07 DIGIT ["." fraction] ; 100.fraction to
179.fraction
               / [ "-" / "+" ] DIGIT1 DIGIT8 DIGIT0                  ; 180 exactly

fraction      = 1*DIGIT

DIGIT0        = %x30          ; 0
DIGIT1        = %x31          ; 1
DIGIT         = %x30-39       ; 0-9
DIGIT07       = %x30-37       ; 0-7
DIGIT08       = %x30-38       ; 0-8
DIGIT8        = %x38          ; 8
DIGIT9        = %x39          ; 9

```

Note: The ABNF above is available for download at the [atsc-schemas.org](https://atsc-schemas.org/atsc3.0/a331/20250910/) repository: <https://atsc-schemas.org/atsc3.0/a331/20250910/>

Modify Section 8.1.1.3, “Synchronization and Time,” as shown:

ROUTE/DASH requires accurate ~~wall-clock~~ and stable time for synchronization of service components.

Network servers for both broadcast and broadband Components of a Service shall synchronize to a ~~common wall-clock~~ (UTC) source. A SATNAV system (such as ~~GPS~~) a GNSS or other source with similar accuracy and stability) is sufficient.

– End of Document –